



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,387	01/29/2007	Sang-Jin Yoon	YHK-0156	1932
34610 7590 12/30/2008 KED & ASSOCIATES, LLP P.O. Box 221200 Chantilly, VA 20153-1200				
EXAMINER				
MCCOMMAS, STUART S				
ART UNIT		PAPER NUMBER		
2629				
MAIL DATE		DELIVERY MODE		
12/30/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/565,387

Applicant(s)

YOON, SANG-JIN

Examiner

Stuart McCommas

Art Unit

2629

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 9-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 9-19 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 9, 11-12 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Takayama et al. (United States Patent 6,249,087), hereinafter referenced as Takayama.

Regarding claim 9, Takayama discloses a plasma display device comprising:

a plasma display panel (PDP) having scan electrodes and sustain electrodes to form a plurality of electrode pairs (figure 1);

a first driving circuit (scan driver 86) that initializes discharge cells by applying a first signal having a first gradually rising waveform (V1y) to the scan electrodes during a reset period (TR) of at least one sub-field, the first gradually rising waveform increasing to a first maximum voltage value (figure 1; figures 7-8; tables 7-8);

wherein the first driving circuit (86) applies a second signal having a second gradually rising waveform (V2y) to the scan electrodes after applying the first signal in the reset period and before an address period of the at least one sub-field, the second gradually rising waveform increasing to a second maximum voltage value less than the first maximum voltage value (figure 1; figures 7-8; tables 7-8).

Regarding claim 11, Takayama discloses everything as applied above, further Takayama discloses that a difference between the first max voltage value and the second max voltage value is substantially the same as a sustain voltage applied to the scan electrodes or sustain electrodes in sustain period of at least one sub-field (figures 7-8; tables 7-8).

Regarding claim 12, Takayama discloses everything as applied above, further Takayama discloses that a slope of the first gradually rising waveform is substantially the same as a slope of the second gradually rising waveform (figure 7).

Regarding claim 19, Takayama discloses a method of driving a plasma display panel based on a plurality of sub-fields, the plasma display panel having a plurality of discharge cells, and each of the cells having a scan electrode and a sustain electrode (figure 1), comprising:

providing a first signal including a first ramp-up signal to the scan electrode during an initialization period of at least one sub-field (tables 7-8; figures 7-8);

providing a second signal including a second ramp-up signal to the scan electrode after providing the first signal and during the at least one subfield (tables 7-8; figures 7-8);

providing a scan signal to the scan electrode during an address period of the at least one sub-field, the scan signal being provided after the second signal in the at least one subfield (tables 7-8; figures 7-8);

providing at least one sustain signal to at least one of the scan electrode or the sustain electrode during a sustain period of the at least one sub-field (tables 7-8; figures 7-8);

wherein the first ramp-up signal of the first signal has a first peak voltage value and the second ramp-up signal of the second signal has a second peak voltage value, wherein the first peak voltage value is greater than the second peak voltage value (tables 7-8; figures 7-8).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over embodiment 8 of Takayama et al. (United States Patent 6,249,087), hereinafter referenced as Takayama in view of embodiment 2 of Takayama.

Regarding claim 1, Takayama in embodiment 8 discloses a driving apparatus for a plasma display panel, comprising:

a set-up supplier (drive unit 80) for supplying a rising ramp waveform (V21y) to scan electrodes in an initialization period and for supplying a positive enhancing pulse (V31y) to the scan electrodes during an enhancing period following said initialization period (figure 1; figure 15);

a negative voltage supplier (drive unit 80) for supplying a falling ramp waveform

(V22y) to the scan electrodes in the initialization period and for supplying a negative enhancing pulse (V32y) to the scan electrodes during the enhancing period (table 5; figure 1; figure 15).

However Takayama fails to disclose wherein the rising ramp waveform increases to a peak voltage and the positive enhancing pulse has a maximum voltage less than the peak voltage in embodiment 8.

In embodiment 2 Takayama discloses wherein the rising ramp waveform (V1y) increases to a peak voltage and the positive enhancing pulse (V2y) has a maximum voltage less than the peak voltage (table 7; figure 7).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify embodiment 8 of Takayama with embodiment 2 of Takayama by specifically providing wherein the rising ramp waveform increases to a peak voltage and the positive enhancing pulse has a maximum voltage less than the peak voltage for the purpose of precisely controlling discharge in a display to improve the quality of the display (column 12 lines 35-40).

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama in view of Takayama (United States Patent 6,747,614), hereinafter referenced as 614.

Regarding claim 10, Takayama discloses everything as applied above, however Takayama fails to disclose wherein the second maximum voltage value is lower than a

sustain voltage applied to the scan electrodes or applied to the sustain electrodes in a sustain period of the at least one subfield.

In a similar field of invention 614 discloses wherein the second maximum voltage value is lower than a sustain voltage applied to the scan electrodes or applied to the sustain electrodes in a sustain period of the at least one subfield (figure 4).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takayama with 614 by specifically providing wherein the second maximum voltage value is lower than a sustain voltage applied to the scan electrodes or applied to the sustain electrodes in a sustain period of the at least one subfield for the purpose of precisely controlling discharges in a display to improve the quality of the display (column 6 lines 12-32).

6. Claims 13 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama in view of Takeda et al. (United States Patent Application Publication 2002/0075206), hereinafter referenced as Takeda.

Regarding claim 13, Takayama discloses everything as applied above, however Takayama fails to disclose wherein a ground voltage is applied to the sustain electrodes when the second gradually rising waveform is applied to the scan electrodes.

In a similar field of invention Takeda discloses that a ground voltage is applied to the sustain electrodes when the second gradually rising waveform (A11) is provided to the scan electrodes (figure 5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takayama with Takeda by specifically providing wherein a ground voltage is applied to the sustain electrodes when the second gradually rising waveform is provided to the scan electrodes for the purpose of suppressing discharge errors in the display by precisely controlling discharges to improve the quality of the display (paragraph 31).

Regarding claim 23, Takayama discloses everything as applied above, however Takayama fails to disclose wherein a ground voltage is provided to the sustain electrode when the second signal is provided to the scan electrode.

In a similar field of invention Takeda discloses that a ground voltage is provided to the sustain electrode when the second signal (A11) is provided to the scan electrode (figure 5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takayama with Takeda by specifically providing wherein a ground voltage is provided to the sustain electrode when the second signal is provided to the scan electrode for the purpose of suppressing discharge errors in the display by precisely controlling discharges to improve the quality of the display (paragraph 31).

7. Claims 14-15 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over embodiment 2 of Takayama et al. (United States Patent 6,249,087) in view of embodiment 8 of Takayama et al..

Regarding claim 14, Takayama in embodiment 2 discloses everything as applied above, however in embodiment 2 Takayama fails to disclose wherein the rising ramp waveform increases to a peak voltage and the positive enhancing pulse has a maximum voltage less than the peak voltage.

In embodiment 8 Takayama discloses wherein the first signal further has a first gradually falling waveform provided after the first gradually rising waveform during the reset period of the at least one subfield (figure 15).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify embodiment 2 of Takayama with embodiment 8 of Takayama by specifically providing wherein the first signal further has a first gradually falling waveform provided after the first gradually rising waveform during the reset period of the at least one subfield for the purpose of precisely controlling discharge in a display to improve the quality of the display (column 14 lines 26-40).

Regarding claim 15, embodiments 2 and 8 of Takayama, the combination discloses everything as applied above, further in embodiment 8 Takayama discloses wherein the second signal further has a second gradually falling waveform provided after the second gradually rising waveform during the reset period of the at least one subfield (figure 15).

Regarding claim 21, Takayama in embodiment 2 discloses everything as applied above, however in embodiment 2 Takayama fails to disclose that the first signal includes a first ramp-down signal.

In embodiment 8 Takayama discloses that the first signal includes a first ramp-down signal (figure 15).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify embodiment 2 of Takayama with embodiment 8 of Takayama by specifically providing that the first signal includes a first ramp-down signal for the purpose of precisely controlling discharge in a display to improve the quality of the display (column 14 lines 26-40).

Regarding claim 22, embodiments 2 and 8 of Takayama, the combination discloses everything as applied above, further in embodiment 8 Takayama discloses that the second signal includes a second ramp-down signal (figure 15).

8. Claims 16-17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over embodiment 2 of Takayama in view of embodiment 8 of Takayama and further in view of Takeda.

Regarding claim 16, embodiments 2 and 8 of Takayama, the combination discloses everything as applied above, however the combination fails to disclose wherein the first gradually falling waveform is provided until a voltage provided to the scan electrodes reaches a first voltage, the second gradually falling waveform is provided until the voltage reaches a second voltage value, wherein the first and second voltages are different.

In a similar field of invention Takeda discloses wherein the first gradually falling waveform (A12) is provided until a voltage provided to the scan electrodes reaches a

first voltage, the second gradually falling waveform (A13) is provided until the voltage reaches a second voltage value, wherein the first and second voltages are different (figure 5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of embodiments 2 and 8 of Takayama with Takeda by specifically providing wherein the first gradually falling waveform is provided until a voltage provided to the scan electrodes reaches a first voltage, the second gradually falling waveform is provided until the voltage reaches a second voltage value, wherein the first and second voltages are different for the purpose of suppressing discharge errors in the display by precisely controlling discharges to improve the quality of the display (paragraph 31).

Regarding claim 17, embodiments 2 and 8 of Takayama and Takeda, the combination disclose everything as applied above, further Takeda discloses that the magnitude of the second voltage is greater than the first voltage (figure 5).

Regarding claim 25, embodiments 2 and 8 of Takayama, the combination discloses everything as applied above, however the combination fails to disclose wherein a lowest voltage of the first ramp-down signal is less than a lowest voltage of the second ramp-down signal.

In a similar field of invention Takeda discloses that a lowest voltage of first ramp-down signal is lower than a lowest voltage of the second ramp-down signal (figure 5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of embodiments 2 and 8 of Takayama with Takeda by specifically providing wherein a lowest voltage of first ramp-down signal is lower than a lowest voltage of the second ramp-down signal for the purpose of suppressing discharge errors in the display by precisely controlling discharges to improve the quality of the display (paragraph 31).

9. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over embodiment 2 of Takayama in view of embodiment 8 of Takayama and further in view of Homma (United States Patent Application Publication 2002/0063663), hereinafter referenced as Homma.

Regarding claim 18, embodiments 2 and 8 of Takayama, the combination discloses everything as applied above, however the combination fails to disclose wherein a voltage substantially similar to a sustain voltage provided to the scan or sustain electrodes during a sustain period is provided to the sustain electrodes when the first gradually falling waveform is applied to the scan electrodes.

In a similar field of invention Homma discloses that a voltage substantially similar to a sustain voltage provided to the scan or sustain electrodes during the sustain period is provided to the sustain electrodes when the first gradually falling waveform is applied to the scan electrodes (paragraphs 60-61; figure 9).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of embodiments 2 and 8 of

Takayama with Homma by specifically providing wherein a voltage substantially similar to a sustain voltage provided to the scan or sustain electrodes during the sustain period is provided to the sustain electrodes when the first gradually falling waveform is applied to the scan electrodes for the purpose of conserving power and improving brightness by using a common voltage value during both the initialization period and the sustaining period (paragraph 38).

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama in view of Homma (United States Patent Application Publication 2002/0063663), hereinafter referenced as Homma.

Regarding claim 24, Takayama discloses everything as applied above, however Takayama fails to disclose wherein a sustain voltage is provided to the sustain electrode when the first signal is provided to the scan electrode.

In a similar field of invention Homma discloses that a sustain voltage is provided to the sustain electrode when the first signal is provided to the scan electrode (paragraphs 60-61; figure 9).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takayama with Homma by specifically providing wherein a sustain voltage is provided to the sustain electrode when the first signal is provided to the scan electrode for the purpose of initiating a priming discharge and controlling wall charges to increase the quality of the display (paragraphs 12-13).

Response to Arguments

11. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

On pages 8-11, Applicant argues that Takiyama does not disclose the second gradually rising waveform having a maximum voltage less than the maximum voltage of the first gradually rising waveform.

The Examiner respectfully disagrees, because a different embodiment (embodiment 2) discloses this feature in figures 7-8 and tables 7-8.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart McCommas whose telephone number is

(571)270-3568. The examiner can normally be reached on Monday-Friday 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571)272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629

Stuart McCommas
Patent Examiner
Art Unit 2629

SSM